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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|--|-------------|----------------------|-----------------------------|------------------|
| 10/607,092 | 06/26/2003 | Willis D. Campbell | G4500-022 (38.8) | 5366 |
| 26158 | 7590 | 11/17/2004 | EXAMINER | |
| WOMBLE CARLYLE SANDRIDGE & RICE, PLLC P.O. BOX 7037 ATLANTA, GA 30357-0037 | | | TORRES VELAZQUEZ, NORCA LIZ | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 1771 | |

DATE MAILED: 11/17/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | |
|------------------------------|---------------------------|---|--|
| Office Action Summary | Application No. | Applicant(s) ML | |
| | 10/607,092 | CAMPBELL ET AL. | |
| | Examiner | Art Unit | |
| | Norca L. Torres-Velazquez | 1771 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on June 23, 2003 through Jan 2, 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-42 is/are pending in the application.
 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12, 14-32 and 34-42 is/are rejected.
- 7) ☒ Claim(s) 1, 13, 33, 42 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date <u>93003</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. It is noted that the Specification of the parent application 09/851,888, now patent no. US 6,706,650 B2 does not provide support for the first and second set of yarns, therefore, the filing date applicable for those limitations is the filing date of the present application (June 26, 2003).

Claim Objections

2. Claim 1 is objected to because of the following informalities: it lists (a), (b) and (b) instead of (c). Appropriate correction is required.

Claim Rejections - 35 USC § 112

3. Claims 27, 29-30, 32 and 36-39 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. It is not clear to which "said yarns" the claims are referring... the first set of yarns or the second set of yarns? For examining purposes, the Examiner assumes that it refers to the first set of yarns.

Claim Rejections - 35 USC § 102/103

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1-3, 6-7, 14 and 23-25 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over GROSS (US 3,806,959).

GROSS discloses a knitted thermal blanket constituted of a material made of a combination of flame retardant synthetic yarn staple fiber, and a blended yarn containing a synthetic fiber and a plurality of metal fibers to render the fabric conductive throughout and to dissipate any electric charge therein. The reference teaches that the metal fibers have a weight relative to the blanket of approximately 0.10 to 2 percent. (Claim 1) The reference teaches the use of a modified acrylic staple with 35-85 percent acrylonitrile for the synthetic yarn. (Col. 1, lines 34-39) As the antistatic material, the reference uses stainless steel fibers. (Col. 1, lines 54-57)

Although GROSS does not explicitly teach the fabric meets the claimed testing methods, it is reasonable to presume that these properties are inherent to the fabric of GROSS. Support for said presumption is found in the use of like materials (i.e. a fabric made from a first set of yarns of modacrylic and a second set of synthetic fibers blended with metal fibers). The burden is upon Applicant to prove otherwise. *In re Fitzgerald* 205 USPQ 594. In addition, the presently claimed property of meeting the claimed testing methods would obviously have been present one the GROSS product is provided. Note *In re Best*, 195 USPQ at 433, footnote 4 (CCPA 1977) as to the providing of this rejection made above under 35 USC 102.

6. Claims 4 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over GROSS as applied above, and further in view of HANYON (US 6,800,367).

GROSS fails to teach that the second set of yarns comprise about 20 percent stainless steel fibers.

HANYON relates to fire retardant and heat resistant yarns and fabrics.

In Examples 2 and 3, the reference teaches a yarn that comprises 20.5% stainless steel fibers and 23.7% stainless steel fibers, respectively. (Col. 17, lines 11-37)

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the fabric of GROSS and provide it with yarns that have at least 20% stainless steel fibers with the motivation of producing fabrics with high tensile strength, cut resistant and high durability as disclosed by HANYON. (Col. 2, lines 16-25).

7. Claims 5, 9-11, 15, 16, 19, 22, 27, 29-31, 34, 35, 36 and 39 are rejected under 35 U.S.C. 103(a) as being unpatentable over GROSS as applied above, and further in view of EDWARDS (GB 2152542 A).

GROSS fails to teach the use of high-energy absorptive fibers.

EDWARDS teaches a fire retardant fabric that comprises a mixture of different fibers. (Abstract) The reference teaches that the fabric can be fabricated from two different yarns each of which comprise aramid fiber. The reference teaches the use of a yarn consisting of 50% aramid fiber and 50% modacrylic fiber. (Col. 1, lines 53-59) The reference further teaches that the fibers are spun and that the yarns can be used for a woven fabric. (Col. 1, lines 13 and 64)

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the fabric of GROSS and further provide it high energy absorptive fibers (aramid fibers) in the modacrylic yarn with the motivation of providing the fabric with desirable properties for fire retardant fabrics such as wear resistance, strength, handle

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and dimensional stability by the inclusion of aramid fibers as taught by Edwards. (Refer to Col. 1, lines 14-26)

Although GROSS and EDWARDS do not explicitly teach the claimed tensile strength and tear resistance it is reasonable to presume that these properties are inherent to the woven fabrics taught by the GROSS and EDWARDS combination. Support for said presumption is found in the use of like materials (i.e. woven fabrics produced from first and second yarns, and that comprise modacrylic and anti-static fibers). The burden is upon Applicant to prove otherwise. *In re Fitzgerald* 205 USPQ 594. In addition, the presently claimed properties of tensile strength and tear resistance would obviously have been present one the fabric product from the combination of GROSS and EDWARDS is provided. Note *In re Best*, 195 USPQ at 433, footnote 4 (CCPA 1977) as to the providing of this rejection made above under 35 USC 102. Reliance upon inherency is not improper even though rejection is based on Section 103 instead of Section 102. *In re Skoner, et al.* (CCPA) 186 USPQ 80

8. Claims 15, 19, 35 and 39 are rejected under 35 U.S.C. 103(a) as being unpatentable over GROSS and EDWARDS (GB 2152542 A) and further evidenced by Lunsford et al. (US 6,626,964).

With regards to claims 15, 19, 35 and 39, it is noted that the flame resistant fibers taught by MONTGOMERY are known to have tenacity of at least about 2 grams/denier as evidenced by Lunsford that uses aramid fibers and discloses that these have tenacities values approximately between 21-27 g/d. (Col. 3, lines 4-5 and 59-61)

9. Claims 8, 12, 17-18, 28, 32 and 37-38 are rejected under 35 U.S.C. 103(a) as being unpatentable over GROSS and EDWARDS as applied above, and further in view of MONTGOMERY (US 5,033,262).

GROSS and EDWARDS fail to teach the use of a dye.

EDWARDS teaches a yarn with 50% modacrylic and 50% aramid, but it fails to teach using higher concentrations of the modacrylic fibers within the yarn to meet the presently claimed ratio of 70-97 percent modacrylic fibers and 3-30 percent high-energy absorptive fibers.

MONTGOMERY et al. discloses a corespun yarn for forming fabric useful in the production of fire resistant apparel that includes a core of high temperature resistant fibers, core wrapper of low temperature resistant fibers surrounding and covering the core, and an outer sheath of low temperature resistant fibers surrounding and covering the core wrapper and the core. The reference teaches that the corespun yarn is knitted or woven into a fabric and subjected to a high temperature flame environment, the low temperature resistant fibers of the core wrapper and the outer sheath are charred but do not melt, drip or exhibit after flame or afterglow, and the charred portion remains in position around the core and maintain the same type of flexibility and integrity as the unburned fabric. (Abstract) These are characteristics aimed by flammability standards. It is further noted that the reference teaches the use of KEVLAR® that consists of long molecular chains produced from poly-paraphenylene terephthalamide.

The reference further teaches that the corespun yarn of their invention provides fabric, for forming fire resistant safety apparel having the appearance, feel, dyeability, and comfort characteristics of conventional types of fabrics formed of conventional natural fibers and not

including fire resistant characteristics. (Column 1, lines 62-68). The high temperature resistant fibers forming the core are *aramid* fibers or polybenzimidazole fibers. The low temperature resistant fibers of the core wrapper and the outer sheath may be either natural or synthetic, such as cotton, wool, polyester, *modacrylic*, or blends of these fibers. (Column 2, lines 6-12)

The reference teaches that the core of high temperature resistant fibers constitutes about 20% to 25% of the total weight of the corespun yarn 10, the core wrapper 12 of low temperature resistant fibers constitutes about 30% to 65% of the total weight of the corespun yarn 10, and the outer sheath 13 of low temperature resistant fibers constitutes about 20% to 50% of the total weight of the corespun yarn 10. Further, it teaches that the fibers of the core wrapper 12 and the outer sheath 13 may be of the same or of different types. (Column 4, lines 1-16) The reference teaches the use of aramid fibers as the high temperature resistant fibers of the core 10. (Column 3, lines 60-62) It is noted that the teachings of the reference provide for a yarn that could comprise up to 80% modacrylic fibers when the core of high temperature resistant fibers constitutes about 20% of the total weight of the corespun. (Refer to Column 4, lines 1-16)

In Example 3, MONTGOMERY et al. the modacrylic fibers to form the outer sheath 13 in order to make possible to prepare and dye the fabric using standard International Orange dye formulations developed for 100% acrylic fabrics because the acrylic fibers are positioned on the outside of the yarn in the woven fabric. Comparable fire resistant fabrics of 100% Nomex, must either by producer-dyed or solvent dyed to achieve the International Orange colors at very high raw material cost. (Column 6, lines 28-40) It is noted that the use of cationic dyes to color acrylic and modacrylic fibers is well known in the art. While the present reference does not explicitly disclose the use of cationic dyes, it does not preclude from particularly using a

cationic dye. It is further noted that the MONTGOMERY reference does teach the use of standard International Orange dye formulations developed for 100% acrylic fabrics, which are known for being either cationic dyes or their dye bases. It is noted that while MONTGOMERY provides a yarn that has a sheath core structure, the use of the concentration of the materials as taught by MONTGOMERY in their yarn would be recognized in the art of EDWARDS.

It is further noted that the Examiner is not bodily incorporating the yarn structure of Montgomery and substituting the structure of Edwards, but providing motivation to use higher concentration of modacrylic in the yarn of Edwards. Therefore, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to produce a yarn with higher content of modacrylic motivated by the desire of providing a fabric for fire resistant garments that is less expensive to produce and that is more comfortable and has better moisture absorbency and good dye ability characteristics as those produce with higher content of aramid fibers as taught by Montgomery. (Refer to Col. 1, lines 63-67)

Allowable Subject Matter

10. Claims 13, 33 and 42 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

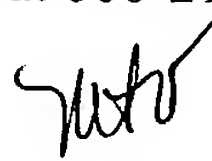
11. The following is a statement of reasons for the indication of allowable subject matter: with regards to claims 13 and 33, while the prior art of Montgomery (US 5,033,262) teaches that a yarn could comprise up to 80% modacrylic fibers and about 20% of high temperature resistant fibers (aramid), it fails to teach a content of between about 90% and 97% modacrylic fibers as claimed herein. With regards to claim 42, the GROSS reference fails to teach a fabric that

comprises of anti-static fibers in both the warp and fill directions. On Col. 1, lines 65 through Col. 2, lines 1-7; the reference teaches placing the metal fibers (anti-static fibers) in the warp ends, in the weft (fill direction) and not in any warp ends at all, but it doesn't teach the use of the metal fibers in both the warp and weft within the fabric.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Norca L. Torres-Velazquez whose telephone number is 571-272-1484. The examiner can normally be reached on Monday-Thursday 8:00-4:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Terrel Morris can be reached on 571-272-1478. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Norca L. Torres-Velazquez
Examiner
Art Unit 1771

November 14, 2004